Introduction and Empower Sleepu2019s Mission

Welcome back to the Sleep Deep Summit. I'm your host, Dr. Audrey Wells. And the next speaker is Dr. Sahil Chopra He is a physician who's passionate about delivering personalized care and sleep medicine.

Now, he's actually the co-founder of Empower Sleep, which is a comprehensive online program that helps patients receive tailored treatment for sleep apnea and insomnia.

And in our discussion today, one of the things I will highlight is the concept of using continuous sleep testing to adjust therapies for these conditions until a person's sleep is actually fixed.

Welcome, Dr. Chopra. Thank you, Dr. Wells. Thanks for having me. I'm excited to talk to you today. Yeah. And I wonder if you could kick us off with kind of your motivation to start a program like Empower Sleep.

You're one of the co-founders, and I imagine your experiences in Sleep Medicine, kind of a traditional model, had something to do with you doing something different and with Empower Sleep.

Yeah, I know it's a great question and I think I'm kind of blessed in the sense that I never had the opportunity to work in a traditional model. I finished my sleep medicine fellowship in Boston at Harvard and had the opportunity to work with very brilliant and amazing people and the kind of care that they deliver.

The idea had always been like, How do we deliver Harvard grade sleep care online? As a fellow? We would see patients from all over the country that would want to get care from Beth Israel Deaconess Medical Center or MGH or Boston Children's Hospital.

And they delivered very personalized sleep care. But in the community, I don't think that was happening. Otherwise they wouldn't have come over there to see us.

So the idea had always been, how do we deliver? How do we replicate what they're doing and just use of the first principles approach of providing sleep care and then then trying to do it in online scalable way.

Right. And, you know, sleep is very amenable to this online platform. So I wonder if you can help everyone understand when a person comes to empower sleep, what do they experience in terms of their evaluation?

Traditional Sleep Testing vs Continuous Monitoring

Yeah, I think that to get a better sense of like how we're different, I think it makes sense to maybe talk about like what the traditional model is like and what typically happens if someone has a suspected sleep problem either because they think something is wrong or they have some co-morbidities that are linked with a sleep disorder.

And their primary care pediatrician tells them that you need to go get a sleep checkup or they're like wearable, like like I have a hoop and I have a garment.

So that either these sort of wearable tools tell us something is not healthy about your sleep. And once patients become aware of that, what will typically happen is they'll do a sleep test.

And these it's like a one or two night test that happens either at home or in a lab. And that test is kind of treated as a binary tool in the sense that either you have sleep apnea or you don't have sleep apnea, and there's kind of this binary outcome.

And if they have sleep apnea, then that patient ends up getting like a CPAP device or a dental appliance. And

there's a very poor aftercare program usually for these patients.

But if they don't have sleep apnea, but they don't sleep well, unfortunately, these patients get kind of lost in the system. And that's like that's the standards kind of the standard of care today.

And from like the first referral to finally getting your CPAP or finally getting acclimatized to sea bed or dental appliances, it's very easy for that to be like a six month journey with that while also not having a very good outcome.

So if that's like the standard of care, we what we do is like fundamentally different in the sense that we use this idea of like continuous sleep testing and what that basically like if you're familiar with like these continuous glucose monitors that these little patches that go on your skin and they measure blood glucose in a very dynamic fashion and one starts to realize that blood sugars are very dynamic and how you walk, what you eat, how much exercise you do, how much sleep you get, influenced is blood sugars in a fundamentally different way.

In the same thing is true for our sleep. If one starts doing continuous sleep testing over a course of time, we're able to learn that alcohol. Alcohol influences my sleep, how exercise influences my sleep, how eating too late influences my sleep. And and then if you take that a little bit further and say, how does this treatment influence my sleep?

Then that unlocks this whole dimension of being able to provide people a personalized sleep care while doing sleep testing in a continuous fashion to see what's working and what's not working.

And so, like, what happens with us is like the patient will sign up and they'll see one of our doctors. They'll, they'll do like two weeks of sleep testing using these medical grade sleep testing devices.

They can look at their sleep data every morning in a very patient and patient friendly way and understand what's happening. This two week trend is way more useful than have a then like a single night snapshot of someone's sleep health.

So we then use that two weeks of data to come up with a very personalized care plan. Maybe it is CPAP, maybe it's body position, maybe it's something as simple as a nose strip. If they have mild sleep apnea, it could be nose dilator, it could be nasal spray.

I saw your talk on CPAP alternatives. Like there's so many different things that can be used for people who have, say, sleep apnea or want to improve their sleep, health.

But if you continue to test over a course of time with these different modalities, then you can figure out what's the best solution and for that individual.

And we kind of do that already. Like if we if we think about the management of hypertension, you if someone has high blood pressure, we start with them on a diuretic or a beta blocker or some medication.

We recheck it. We tell the patient, here's a blood pressure cuff. Check your blood pressure every couple times a week. Then let's circle back in a couple of weeks to see if this is working or not.

If it's not, like, let's do something else. Let's not leave this disorder, this problem untreated for months or decades. Let's quickly figure out what's working and what's not working and get you on a program that that's working for you.

So empowers that does exactly that. Except for sleep, specifically sleep apnea and insomnia. Yeah. And it makes so much sense because in my practice, I can't tell you the number of times someone has reported back to me that their sleep on the night of the test was different than what they usually experience.

And that doesn't only take place in the sleep lab where you would expect that night to be quite different than at home. It also takes place in the home setting and I know that there's new data sort of quantifying that better and bringing to light the idea if we test sleep on multiple nights, we can get a more comprehensive picture of what a

person is experiencing because there may be major differences, even from a weekday to a weekend night, for example, or different things influencing sleep, like you pointed out, exercise, alcohol, food.

Why Retesting Matters After Treatment

So this is a way to kind of get a bigger whole body person experience of somebody sleep. And the testing modality is the ring that you just showed, which tends to be very unintuitive and something that a person could easily handle for a two week time period.

Yeah, no, absolutely. And then also then continuing to use it over a course of time, the in lab experience more like a one night experience. There's, there's, there's quite a bit of data published on this already about how much night to night variation there is in sleep health over say three nights.

But it's even more when you start getting more nights of data. And it's also really exciting because if, if one can start figuring out what is it that they did that gave them bad sleep, there can be a feedback mechanism of not to do that or of course of time.

And if we figure out what is it, what is it that I did do that gave me healthier sleep, I can try to replicate that over a course of time. So it creates kind of this closed feedback loop system that in trains like a healthier behavior towards like at least trying to get higher quality sleep over a course of time for sure.

Yeah. And, you know, sleep is so unique in that the person who's experiencing sleep is unconscious. So that is sort of a blind spot in their life. And with this data that you're capturing, you're allowing them to make connections between what's important that they're doing during the day and how it affects their sleep.

And you brought up the idea of continued testing even after a treatment intervention. And this is really key for both patients who are struggling with insomnia and patients who are moving forward with sleep apnea treatments, especially when sleep apnea treatments don't always fix the sleep, even if they fix the apnea.

Can you talk about that more? Yeah, I know. That's a that's I think something that we don't talk about enough. The first assumption, I think that the clinicians and including like the former version of myself had made is let's say you have someone who has sleep apnea and you put them on CPAP.

We sometimes assume the happy face that we get from the CPAP device is a reflection of happy sleep, but it's not. It's just a reflection of better breathing or happy breathing.

It's not a reflection of it can be a reflection of sleep, but not necessarily because sleep and breathing are two separate things. There can be overlap when breathing is bad and it can disrupt sleep.

But that's not always the case. And sometimes if you try to improve breathing with, say, a CPM device, it is actually disruptive to sleep. And the only way you know that is if you measure it.

So doing a sleep test on a treatment modality, say something like CPAP is very critical to see if it's is the is the cost of fixing my breathing coming at the cost of breaking down my sleep.

And if that cost is too high, then we need to think of a different solution because if the cost is too high and then not feeling substantially better the next day, then I'm not going to be it's going to be harder for me to keep using this therapeutic modality over a course of time.

And like in medicine, we use this idea called compliance. It's kind of silly, but the overall compliance or adherence to that treatment is going to be lower and who doesn't want to wake up rested?

If something helps people, the feeling of waking up rested is is so powerful that people try to go back to that frequently. And if you can help somebody wake up rested, there will be a natural gravitation towards like adherence to that treatment.

So really retesting on on on on on on stays like CPAP is critical to figure out one is it fixing breathing and two is it actually improving my sleep? And if it isn't, then we need to think of other other potential solutions.

Yeah, I totally agree. And I'm glad that you brought up this idea of compliance, a word that I don't actually like, because it suggests some degree of submission to this treatment imposed by the health care delivery system.

And I think that it's very unsatisfying when patients struggle to use a treatment like CPAP, even though all of their numbers from the machine look good, I think it actually does damage to the relationship with their sleep medicine physician when there's that discrepancy with the good numbers that the CPAP is reporting and how the patient is experiencing their sleep or even their daytime alertness.

Yeah, no, totally. And we actually see that often where the machine will underrepresented the burden of residual disease, meaning like if someone has the machine will tell you that you're having 0.

How Sleep Data Measures Quality and Fragmentation

1 happiness per hour, for example, or I think respiratory events per hour. But then when you do a sleep test on that, on that, on CPAP, you see that there's actually more than what the machine is telling you.

And then too, is it if it destroys your sleep, then we need to think of a different solution and you can actually see it now objectively. If someone was having way more deep sleep without CPAP and then on CPAP, they have less deep sleep or we call it stable sleep, then this is not a good solution for that individual.

This sleep disruption over the coming decades will result will have its own downstream consequences. So it just tells us how little we know about sleep medicine in general.

And it's sort of like the it's our field is kind of in an infancy in in its infancy from how much we understand about it. I find it humbling, to be honest.

I think that there's probably still things we don't understand very well about sleep quality. And I'm wondering, with the device that you're using to measure multiple nights of sleep, what are the components captured that feed into this sleep quality index?

Yeah. So the way that these recorders work is it's basically capturing what's called the photo, plus the demography signal. And it's just like a smart way of saying it's like the oxygenation signal over the course of the night and through that signal, because we know, like you and I are talking right now, I'm awake.

You're awake. My autonomic nervous system is behaving in a specific way. I am breathing and heart rate is behaving in a specific way. But when I'm in, say like REM sleep or like deep sleep, like in three sleep, my autonomic nervous system will behave in a very fundamentally different way.

REM and Wake is very similar, but like deep sleep is very specific and it's hard to replicate that pattern from the autonomic nervous system. So the way these records work is are basically looking at what's happening to heart rate and what's happening to breathing and matching those patterns with what happens to what is it supposed to look like in deep sleep, REM sleep and being awake.

So that's kind of how these recorders work. And they work with a pretty high level of accuracy. And so now answering your question about sleep quality, what we can also then start figuring out is the higher the amount of deep sleep, the healthier that individual's sleep will be.

So this idea of like sleep quality is heavily weighted by how much deep sleep does one have, as well as how many sort of unwanted arousal does an individual have.

And that those unwanted arousal are called fragmentation. And fragmentation can either be either what's called like macro fragmentation, like you're awake and you have these long period of awakenings in the middle of the night, or

you can have like this micro fragmentation where it's just these tiny, tiny awakenings that are disruptive to, to, to the process of sleeping.

And this idea of sleep quality, at least from these recorders, is basically looking at how much deep sleep does this individual have? The higher, the better.

How much fragmentation or arousal does this person have, the lower the better. It does not really take into account duration. It just tells us that when this individual is sleeping, what is the health of that sleep for that period of time?

But but you and I know as clinicians that sleep quality is like timing, duration, true sleep quality is timing, duration and quality of sleep. That's how one that predicts better how one feels when they wake up in the morning.

But at least with these recorders, one can figure out that when I do sleep, what's the quality of that sleep? Mm hmm. Yeah. And to kind of bring this home for the people watching, I wonder if you can describe what sort of interventions you might suggest if a person has their sleep apnea treated, for example.

But the recording device is still showing fragmented sleep or periods of sleep disruption that are resulting in your patient feeling like they're not well-rested.

And it's kind of a a complex question because what we need to ask are what that like how I would sort of think about that is, is CPAP the right solution for that individual?

And and if, say, a patient has I'm just going to use this as an example of severe sleep apnea.

Personalizing Treatment and High-Touch Care

And they have prolonged periods where they have very low oxygen levels over the course of the night. And CPAP appears to be like the best solution at that point in time for that individual then.

And it's all like, you know, the devil's always in the details and it's all so it's purely obstructive sleep apnea and it's not central sleep apnea. And it's worse during REM sleep instead of worse during non-REM sleep.

In those situations, it's actually quite easy to help somebody get acclimated to CPAP, you know, modulating the pressures over a course of a couple of weeks to to find what's the right pressure for that individual where if it's we don't want it to be too low, because if it goes too low, it will those obstructive those impending obstructive events will cause somebody to wake up.

And we don't want it to be too high, because if it goes up too high, the high pressure will cause that individual to wake up. So finding that right balance of pressure over time, using the data that we get from the ring and then also finding the right mask is critical.

And thirdly is, do we need to use like a sedative or a hypnotic medication to help consolidate sleep? You know, that that making it harder for that individual to wake up?

It's called the arousal threshold. We want to raise that as best as we can. And then what I think becomes really interesting is let's say I use CPAP with like these settings that what my care team thinks is best for me if I combine side sleeping with these pressures, what does that do to my sleep?

Or if I combine a CPAP with these pressures plus my functional therapy, what starts happening to my sleep? And then it just opens up this world. Like there's so many different permutations of things that can be done that can that we can sort of objectively figure out if they're helping me or not.

So it's kind of a it's a it's a complex and journey. We don't understand sleep in a way that you can do, say like a month's worth of testing and then tell them this is going to be the best solution for you, I think will be there in maybe 5 to 10 years from now.

But today there is a little bit of like trial and error and troubleshooting of like what's the best solution, what permutation of solutions is best for that individual.

I want to highlight a couple of things that you're saying, just to kind of underscore some things that are different from what people's experiences might be in a typical sleep clinic.

One is the idea that there are an array of treatments available for sleep apnea. It's not just CPAP for everybody. And I think it's important to highlight that because in my experience, there are individuals who will actually avoid getting tested because they think that CPAP is going to be at the end of that road and there's no other path.

The other thing that you're saying is that you can combine different treatments and really start to work out for a particular person what different modalities in combination would result in sleep optimization.

And this idea of doing repeat testing is what lets you get there. But I'm also hearing a lot of you're alluding to sort of a high touch situation where you're collaborating with the patient.

So I'm wondering, do you see the patient more frequently after they get started with treatment in order to map out that path just for them? Yeah, I know, 100%.

I mean, the this map is very dynamic because we don't know how one is going to respond to what treatment. So it's a very high touch care system where we see the patients at least every two weeks for the first few months and we then also see with the app they can communicate with their care team of like, Hey Doc, I tried this and this is what it's resulting in.

Can you help me make sense of this? And there's sort of unlimited asynchronous or. Yeah, asynchronous communication between the patient and their care team.

But we try to see patients at least every two weeks because it's complex. It's a mix of like objective numbers and subjective feelings. And those subjective feelings like emojis can help.

But sometimes you just have to have a conversation with the other individual to figure out, like, what? What's going on. And what is the care team like, who is participating in the care of a particular patient.

So our pods are led by a clinician, a physician who sleeps like a board certified sleep specialist that I vetted out. And like I have a really good relationship and I trust.

And then that physician will oversee anywhere between 3 to 4 nurse practitioners in that pod. And then within that pod, there's also a medical assistant for each nurse practitioner.

So each patient will be dedicated, will be designated a pod, which that consists of a sleep specialist, a nurse practitioner and a medical assistant. And on all the visits, the doctor is involved in the care, the nurse practitioner, the mid-level is the point of contact, but the doctors are kept in the loop.

We do these huddles every day like a 30 minute huddle, either in the beginning of the morning or the evening to discuss the patients that we saw that day and the patients that we plan to see tomorrow.

So it's a very high it's a pretty robust system that I'm really proud of that we've been able to build so that we can plan for the patients that we're seeing the next day.

And we have sort of a closed loop system on the patients that we didn't see that day. And the reason that we designed it that way is because we're kind of designing the future of what I think is for sleep medicine, because even many times I've seen like over 100000 hours of medical grade continuous data over the last year and it's confusing sometimes.

I don't know what's the best solution for that individual. Even though I've had the opportunity to train with my really

brilliant people and there is sometimes a little bit of experimentation that's involved.

So like having like the physician, the nurse practitioner, the medical assistant and the patient on the same team allows us to figure out what's going to be the right solution for that individual.

And, and then also for us like to learn like how like how is this individual sleep so different than the other people that we've taken care of? And it's quite it's quite humbling, to be very candid with you, to look at it this way and then to learn like what actually happens to people's sleep over time with different treatment options.

Yeah, I got it. You know, I imagine even already in your mind, you're thinking of specific situations where a patient presented with a challenging picture.

Examples of Tailored Sleep Apnea and Insomnia Care

Can you give an example of a way that your high touch system was able to overcome their sleep barrier and get them moving on to sleeping in a healthy way?

Yeah, I mean, that's happened so many. I mean, it's sort of it's kind of the routine now. So but I can I can share many examples if I just use, for example, somebody who has insomnia.

Let's say you have let's say you have somebody who has insomnia with low sleep quality. And this person is clearly not doing well. They've tried cognitive behavioral therapy for insomnia and that plus maybe adding a sedative like Trazodone or Ambien.

And I'll use president in this example because I just saw this person a couple of days ago where when we put them on Tris alone, you can objectively see that they have more deep sleep.

Okay. So that's that's really exciting and that's really interesting, both from a scientific standpoint and then when you talk to the patient the next day, they actually feel better too.

So then the question becomes, okay, we've established that Trazodone is a drug that works for you, but now it's fair. What's the lowest effective dose of that medicine to help you have?

Like as close to physiologic sleep as possible, but not having any kind of like hangover effect or like not feeling groggy the next day. So that's and so that'll be like an example where like having these high touch points is it allows high touch points to get subjective feedback and then high touch points to look at the data frequently allows us to figure out what's the best solution for what individual.

If we use the example of, say, mild sleep apnea and snoring in someone who is like minimally symptomatic, it's a tough situation because in those situations, like because one of the things is we don't want the treatment to be worse than the disease.

Mm hmm. I've had that experience where, you know, I prescribe a treatment for mild sleep apnea, but the person is definitely feeling worse. Yeah, and it's.

And so the treatment becomes worse than the problem itself. So then the question becomes, what are other solutions out there that are less cumbersome, that are better than the disease itself and not cumbersome over a course of time?

So they can be done consistently. So like many times these in these patients who have like mild sleep apnea, relatively preserved, sleep quality, minimal daytime symptoms, well, let's actually start off we've could we call it like a mild sleep apnea kit where it has like a lip tape, a nose dilator.

It has like a special straw. You may have seen this REMplenish therapy straw so many times off with that. And we'll see. When will they ask the patient, hey, try lip tape.

This is like a very controlled environment. You're going to keep testing. Your sleep apnea is mild. It's not going to kill you. Just try and then you're probably we're like the physics of like physics and physiology of keeping the mouth open during sleep are conducive to having apnic events versus if someone's mouth is closed.

So if someone if we can help promote nasal patency, keep the tongue in the right position by keeping the mouth closed and plus or minus some kind of a body positioning intervention, like over a course of six weeks, we can figure out do these conservative interventions while doing continuous testing, do they solve the problem of, like, mild sleep apnea and snoring for that individual?

Mm hmm. So maybe that's that that's like, another example. But these examples are, like, every single day. This is just like how our clinic operates on a day to day basis that we're I think we're just kind of used to it.

But in a traditional care model, I don't think these are very frequent scenarios. Totally. I mean, I'm thinking of a place that I had practiced at in the past.

And the truth was, you know, there were thousands of people on the waiting list to see a doctor. So I would see a person for a new patient consultation order testing for them.

And I may or may not ever see them again. I mean, chances were I would not because they turned up with a different provider or they would be lost to care or, you know, any number of different outcomes.

But it was extraordinarily unsatisfying because I, I did not feel like that was care.

Finding Empower Sleep and Closing Remarks

And what what you're describing is more in line with a health care model. So I really applaud your innovation in, in founding and running Empower Sleep.

I think the title is definitely appropriate both for the patient and the physician running these pods. I wonder if you can tell us, Dr. Chopra, where would people go to find out more or even to connect with Empower Sleep.

And they can First of all, thank you. Thank you. I mean, it's very humbling to hear from another fellow clinician for like sort of embarking on building something that is different.

So thank you for thank you for that. And for patients they can just go to empowersleep.com And it's pretty self-explanatory if they click on this I think it's a Fix My Sleep button in the upper right hand corner and it's pretty self-explanatory.

Explanatory to schedule a visit and sign up and we'll be we would love to be able to take care of you and help you find a solution that works for you.

I think clicking the button that says Fix my sleep is a great start to the end journey of that path. Dr. Chopra, I thank you for talking about your program and your wisdom with us today.

It's been a pleasure. Thank you so much.